

**OPERATE:** DIGITAL FEEDBACK LOOP

# INTEGRATING MULTIPLE ANALYTICAL MODELS FOR NEW BUSINESS MODELS

## THE CHALLENGE

An electric truck manufacturer is receiving complaints and maintenance calls from its fleet customers, who say the battery range of its light-duty vehicles is not delivering the advertised mileage range. Several factors, including driver behavior, payload weight, temperature, and battery health, can impact mileage performance. The manufacturer would like to offer a new service that would enable drivers to better understand and control their environment to achieve better range performance.

The trucks use a vehicle gateway running VxWorks®. The gateway has a fleet sensor platform that monitors subfunctions in the vehicle such as engine diagnostics, battery efficiency, and even driver productivity. To help improve the range, the fleet manager has agreed to share real-time data from the vehicle with the manufacturer, using Mosquitto, the popular open source MQTT message broker.

## THE SOLUTION

The manufacturer's application engineers use the digital feedback loop capability in Wind River® Studio, along with Grafana, to set up an analytics dashboard that monitors data inputs from the fleet. The data scientist and software team use this data to create several analytical models to better predict the current state and range of the battery. The telematics application team modifies the software and the in-vehicle user interface display graphics to show a battery charge prediction range.

The fleet manager then deploys this new application, as a container, over the air to each vehicle in the fleet. Drivers can now be alerted to adverse driving behavior and conditions that are impacting the battery range. In addition, the manufacturer uses the fleet data to improve the system's vehicle software.

## THE RESULTS

**Both the manufacturer and the fleet manager benefit from better system analytics, which helps reduce costly maintenance calls and cuts the number of trucks being taken out of service.** In addition, the visual on-truck dashboard delivers a new service that, by increasing driver behavior awareness, brings greater customer satisfaction.



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